

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

DEC 6 2004 Applicant(s): S. Shukuri, et al.

Appln. No. 10/635,511

Filed: August 7, 2003

For: SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING  
DEPOSITED LAYER FOR GATE INSULATION

Group: 2814

Examiner: L. Pham

**INFORMATION DISCLOSURE STATEMENT  
UNDER 37 CFR § 1.97 AND § 1.98**

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

December 6, 2004

Sir:

Pursuant to Applicants' duty of disclosure, enclosed please find a copy of an Office Action in connection with a Japanese patent application corresponding to the above-identified application. Also enclosed is an English translation of this Office Action. Further enclosed are copies of each of the documents cited in the enclosed Office Action. Moreover, an English-language Abstract is enclosed with each of these cited documents, except for Japanese Patent Document No. 4-122063; a corresponding U.S. patent to No. 4-122063 (that is, U.S. Patent No. 5,241,208 to Taguchi) is enclosed herewith. Also enclosed herewith is an English translation of cited Japanese Patent Document No. 6-61499.

Also enclosed herewith is a copy of Japanese Patent Document No. 9-181159 and an English abstract thereof; and a copy of Japanese Patent Document No. 9-260484, and U.S. Patent No. 5,897,361 corresponding thereto.

Further enclosed herewith is a Form PTO/SB/08A, listing all of the enclosed documents.

This Information Disclosure Statement is being submitted prior to a first Office Action on the merits in the above-identified application. Accordingly, requirements of 37 CFR § 1.97(b)(3) are satisfied.

In any event, the following Statement is made under 37 CFR § 1.97(e):

Each item of information contained in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement.

To the extent that the enclosed documents are not in English, it is respectfully submitted that requirements of 37 CFR § 1.98(a)(3) are satisfied by English translations and/or English Abstracts and/or corresponding U.S. patents to the non-English language documents.

In addition, Applicants respectfully submit the following comments, in connection with the enclosed documents.

Japanese Patent Document No. 6-61499 does not disclose an element isolation region formed by forming grooves in a substrate, by depositing an insulating film over the grooves by using a vapor deposition method and by polishing the insulating film so as to fill the insulating film in the grooves. This document does not disclose the gate insulating film including a thermally oxidized film and a deposited film formed over the thermally oxidized film and having a thickness greater than that of the thermally oxidized film. This document discloses a gate insulating film

including a thermally oxidized film of 16 nm thickness and a HTO CVD film of 16 nm and a field oxide film 27, as shown, for example, in Figs. 9-11 and 27.

Japanese Patent document No. 6-244366 does not disclose an element isolation region which is formed by forming grooves in a substrate, by depositing an insulating film over the grooves using a vapor deposition method and by polishing the insulating film so as to fill the insulating film in the grooves. This document also does not disclose a gate insulating film including a thermally oxidized film and a deposited film formed over the thermally oxidized film. This document discloses LOCOS structure 12.

Japanese Patent Document No. 4-122063, corresponding to U.S. Patent No. 5,241,208, does not disclose an element isolation region which is formed by forming grooves in a substrate, by depositing an insulating film over the grooves using vapor deposition methods and by polishing the insulating film so as to fill the insulating film in the grooves. This document does not disclose a gate insulating film including a thermally oxidized film and a deposited film formed over the thermally oxidized film and having a thickness greater than that of the thermally oxidized film. This document discloses a selective oxidation method for forming a field oxide film 9 and a gate insulating film including a thermally oxidized film 16 of 7 nm and a nitride film 17 of 7 nm, as seen in column 4, lines 37-51 and in Fig. 2A of U.S. Patent No. 5,241,208.

Japanese Patent Document No. 10-22397 has a publication date of January 23, 1998, which is later than the priority date under 35 USC §119 of December 9, 1997, of the above-identified application. In any event, No. 10-22397 does not disclose an element isolation region which is formed by forming grooves in

a substrate, by depositing an insulating film over the grooves using a vapor deposition method and by polishing the insulating film so as to fill the insulating film in the groove. This document also does not disclose a gate insulating film including a thermally oxidized film and a deposited film formed over the thermally oxidized film and having a thickness greater than that of the thermally oxidized film. This document discloses LOCOS and a gate insulating film including a thermally oxidized film 3 of 10 nm and a high temperature CVD oxide film 6 of 10 nm.

In view of all of the foregoing, it is respectfully submitted that applicable requirements of 37 CFR § 1.97 and § 1.98 have been satisfied, in connection with each of the documents listed on the enclosed Form. Accordingly, consideration of the listed documents, upon examination of the above-identified application, is respectfully requested.

Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to the Deposit Account No. 01-2135 (Case No. 501.36694CV4), and please credit any excess fees to such Deposit Account.

Respectfully submitted,

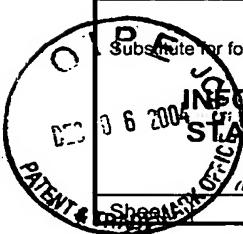
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**INFORMATION DISCLOSURE STATEMENT BY APPLICANT**

(use as many sheets as necessary)

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**Complete if Known**

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|----------------------|--------------------|
| Application Number   | 10/635,511         |
| Filing Date          | 8/7/2003           |
| First Named Inventor | S. Shukuri, et al. |
| Art Unit             | 2814               |
| Examiner Name        | P. Long            |

Attorney Docket Number **501.36694CV4****U.S. PATENT DOCUMENTS**

| Examiner Initials' | Cite No. <sup>1</sup> | Document Number                          | Publication Date<br>MM-DD-YYYY | Name of Patentee or<br>Applicant of Cited Document | Pages, Columns, Lines,<br>Where Relevant<br>Passages or Relevant<br>Figures Appear |
|--------------------|-----------------------|--|--------------------------------|--|--|
|                    |                       | Number-Kind Code <sup>2</sup> (if known) |                                |  |  |
|                    |                       | US- 5,897,361                            | 4/27/1999                      | Egawa  |  |
|                    |                       | US- 5,241,208                            | 8/31/1993                      | Taguchi  |  |

**FOREIGN PATENT DOCUMENTS**

| Examiner Initials' | Cite No. <sup>1</sup> | Foreign Patent Document  | Publication Date<br>MM-DD-YYYY | Name of Patentee or<br>Applicant of Cited Document | Pages, Columns,<br>Lines,<br>Where Relevant<br>Passages or Relevant<br>Figures Appear | Translation/Abstract |
|--------------------|-----------------------|--|--------------------------------|--|---|----------------------|
|                    |                       | Country Code <sup>3</sup> -Number <sup>4</sup> -Kind<br>Code <sup>5</sup> (if known) |                                |  |   |                      |
|                    |                       | JP 9-181159  | 7/11/1997                      | Matsushita Electric Ind. Co.                       |   | X                    |
|                    |                       | JP 9-260484  | 10/3/1997                      | Kabushiki Kaisha Toshiba                           |   | X                    |
|                    |                       | JP 6-61499   | 3/4/1994                       | Mitsubishi Electric Corp.                          |   | X                    |
|                    |                       | JP 6-244366  | 9/2/1994                       | Sony Corp.   |   | X                    |
|                    |                       | JP 4-122063  | 4/22/1992                      | Kabushiki Kaisha Toshiba                           |   | X                    |
|                    |                       | JP 8-204142  | 8/9/1996                       | Oki Electric Ind. Co., Ltd.                        |   | X                    |
|                    |                       | JP 9-107028  | 4/22/1997                      | Samsung Electron Co., Ltd.                         |   | X                    |
|                    |                       | JP 10-022397   | 1/23/1998                      | Ricoh Co., Ltd.                                    |   | X                    |

TO/SB/08B (04-03)

**NON PATENT LITERATURE DOCUMENTS**

|                    |          |   |                |
|--------------------|----------|---|----------------|
| Examiner Initials* | Cite No. | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | T <sup>2</sup> |
|                    |          | Office Action dated September 28, 2004, in corresponding Japanese Patent Application No. Hei 9-338586   |                |
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|--------------------|-----------------|
| Examiner Signature | Date Considered |
|--------------------|-----------------|

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Applicant's unique citation designation number (optional). <sup>2</sup>Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 120 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing the this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option2